The two species which can at present be assigned definitely to this genus may be distinguished thus :—

1. Head not retractile within a cuticular sheath. Œsophagus long (one-seventh to one-fourth of the total length). Vulva situated within the last quarter of the total length. Parasitic in *Varanus* and other semi-aquatic reptiles in Africa, the East Indies, and Australasia	*T. tiara* (v. Linst.).
2. Head retractile within a loose cuticular sheath. Œsophagus comparatively short (about one-eleventh of the total length). Vulva in the middle third of the body. Parasitic in semi-aquatic reptiles in South America	*T. diadema.*

A table of measurements is given on p. 231, including, for the sake of completeness, these two species and the more doubtful *T. anomala*. The measurements given by von Linstow (1904) for *T. tiara* are placed beside my own for comparison. A certain amount of variation was found to exist, and for this reason measurements derived from the three sets of specimens studied are given side by side.

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XX.—*Preliminary Notice of some Irish Sponges.—The Monaxonellida (Suborder Sigmatomonaxonellida) obtained by the Fisheries Branch of the Department of Agriculture and Technical Instruction, Ireland.*

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The following list of sponges belonging to the suborder Sigmatomonaxonellida, Dendy, contains ninety-five species. Fifty-one of the species are now recorded for the first time within the Irish area, and of these thirty-one have not been taken previously off any part of the British Isles.

Thirteen species are described as new.

Nearly all the sponges in this collection which are new to the British Isles were dredged in deep water off the west and south-west coasts of Ireland.

A report on the collection is in preparation for publication in the "Scientific Investigations" of the Irish Fisheries Branch.

List of Species.

Grade MONAXONELLIDA.

Suborder SIGMATOMONAXONELLIDA.

Family **Haplosclerida**.

Subfamily *Gellinæ*.

Gellius flagellifer, *R. & D.*
Oceanapia robusta (*Bowerbank*).

Subfamily *Reniering*.

Reniera cinerea (*Grant*).
—— peachi (*Bowerbank*).
—— simulans (*Johnston*).
—— fistulosa (*Bowerbank*).
—— indistincta (*Bowerbank*).
Metschnikowia spinispiculum (*Carter*).
Halichondria panicea (*Pallas*).
—— fibrosa (*Fristedt*).
Phlœodictyon elongatum (*Topsent*).

Subfamily *Chalininæ*.

Pachychalina limbata (*Montagu*).
Chalina oculata (*Pallas*).

Subfamily *Desmacellinæ*.

Biemna inornata (*Bowerbank*).
Tylodesma annexa (*Schmidt*).
—— informis, sp. n.
Hamacantha johnsoni (*Bowerbank*).
—— falcula (*Bowerbank*).

Family **Desmacidonidæ**.

Subfamily *Mycalinæ*.

Esperiopsis fucorum (*Johnston*).
—— villosa (*Carter*).
—— incognita, sp. n.
—— macrosigma, sp. n.
Mycale ægagropila (*Johnston*).
—— macilenta (*Bowerbank*).
—— placoides (*Carter*), *Lundbeck*.
—— rotalis (*Bowerbank*).
—— fascifibula (*Topsent*).
—— littoralis (*Topsent*).
Rhaphidotheca marshall-halli. *Kent*.
Asbestopluma pennatula (*Schmidt*).
Cladorhiza abyssicola, *Sars*.
Myxilla rosacea (*Lieberkühn*).
—— incrustans (*Johnston*).
—— fimbriata (*Bowerbank*).
Lissodendoryx diversichela, *Lundbeck*.
Iophon nigricans (*Bowerbank*).
Iotrochota acanthostylifera, sp. n.
Forcepia forcipis (*Bowerbank*).
Histoderma physa (*Schmidt*).
Histodermella ingolfi, *Lundbeck*.
Gravella pyrula (*Carter*).

Subfamily *Ectyoninæ*.

Hymedesmia zetlandica, *Bowerbank*.
—— truncata, *Lundbeck*.
—— koehleri (*Topsent*).
—— curvichela, *Lundbeck*.
—— paupertas (*Bowerbank*).
—— pansa, *Bowerbank*.
—— occulta, *Bowerbank*.
—— baculifera (*Topsent*).
—— mutabilis (*Topsent*).
—— crux (*Schmidt*).
—— digitata, *Lundbeck*.
—— mucronata (*Topsent*).
—— tenuisigma, *Lundbeck*.
—— dujardini (*Bowerbank*).
—— helgæ, sp. n.
—— spinosa, sp. n.
—— hibernica, sp. n.
Ectyodoryx atlanticus, sp. n.
Anchinoë fictitius (*Bowerbank*).
Stylostichon plumosum (*Montagu*).
—— dendyi, *Topsent*.
Pocillon hyndmani (*Bowerbank*).
Eurypon clavatum (*Bowerbank*).
—— hispidulum (*Topsent*).
—— affine (*Topsent*).
—— acanthotoxa, sp. n.
—— ditoxa, sp. n.
—— tenuissimum, sp. n.
—— microchela, sp. n.
—— lacazei (*Topsent*).
—— viride (*Topsent*).
Microciona armata, *Bowerbank*.
Clathria dichotoma (*Esper*).
(?) —— anchorata (*Carter*).
Echinoclathria foliata (*Bowerbank*).
Ophlitaspongia seriata (*Grant*).
Plocamia microcionides (*Carter*).
Suberotelites demonstrans, *Topsent*.
Raspailia pumila (*Bowerbank*).
—— howsei (*Bowerbank*).
Cyamon spinispinosum (*Topsent*).
Rhabderemia guernei, *Topsent*.
Spanioplon armaturum (*Bowerbank*).
Leptosastra constellata, *Topsent*.

Family **Axinellidæ**.

Axinella pyramidata, sp. n.
Phakellia ventilabrum (*Johnston*).
—— robusta, *Bowerbank*.
—— rugosa (*Bowerbank*).
Bubaris vermiculata (*Bowerbank*).
Tragosia infundibuliformis (*Johnston*).
Tragosia arctica (*Vosmaer*).
Higginsia thielei, *Topsent*.
Hymeniacidon caruncula, *Bowerbank*.
Halichemia verticillata (*Bowerbank*).

Preliminary Description of the New Species.

Tylodesma informis, sp. n.

The sponge is growing in a thick encrustation on coral.

The main skeleton is an irregular reticulation of tylostyli. In places the spicules are collected into bundles or short fibres. The dermal skeleton consists of broad strands of tylostyli closely packed together and lying tangentially to the surface.

Spicules.—(1) Tylostyli. The shaft is slightly curved and fusiform ; the head is well-defined, oval or rounded. The size varies from about 0·37 mm. by 0·008 mm. to 1·3 mm. by 0·027 mm. (2) Sigmata. These are contort and their longer axis is 0·035–0·015 mm. in length.

The species was dredged at three stations off the south-west coast of Ireland, at depths varying from 250 to 560 fathoms.

Esperiopsis incognita, sp. n.

The sponge is growing in a very thin encrustation on coral.

The skeleton consists of short fibres made up of multiserially arranged styli, which run obliquely through the sponge from base to surface. In addition to these fibres there are thick, well-defined, branching fibres running more or less parallel to the surface of the sponge.

Spicules.—(1) Styli, straight and slender, 0·4–0·45 mm. in length by 0·006–0·008 mm. (2) Isochelæ palmatæ of two forms—(*a*) straight isochelæ with rather long, narrow alæ leaving only a short part of the shaft free. Length 0·035–0·07 mm.; (*b*) very small, slender isochelæ, with slightly curved shaft, 0·013 mm. in length. (3) Sigmata of two forms—(*a*) sigmata lying in one plane and varying a good deal in size. The longer axis is from 0·1–0·32 mm. in length. The maximum thickness of the spicule is about 0·013 mm.; (*b*) slender, contort sigmata with a longer axis of 0·04–0·075 mm.

This sponge is identical with the specimen referred to by Carter as "an unknown sponge," and partly described and figured by him under that name (Journ. Roy. Micr. Soc. ii. 1879).

The sponge was dredged off the west coast of Ireland in 388 fathoms.

Esperiopsis macrosigma, sp. n.

The sponge is growing in a very thin encrustation on coral.

The skeleton consists of bundles of spicules, or of short fibres containing multiserially arranged spicules. In places longer, rather ill-defined fibres run more or less parallel to the surface. There are also single spicules or groups of two or three spicules scattered through the sponge.

Spicules.—(1) Styli slender, straight, tapering to a rather short point. Length 0·37–0·42 mm. by 0·006–0·008 mm. (2) Isochelæ palmatæ of three forms—(*a*) the largest are 0·11–0·125 mm. in length, the shaft is straight and is about 0·006 mm. in thickness. The tooth measures 0·024 mm. across; (*b*) isochelæ with rather long narrow alæ leaving only a short part of the shaft free. Length 0·06 mm.;

(*c*) isochelæ with a slightly curved shaft, 0·015–0·024 mm. in length. (3) Sigmata of two forms—(*a*) sigmata lying in one plane and of very different sizes. The longer axis varies from about 0·1–0·4 mm. in length. The maximum thickness of the spicule is 0·02 mm.; (*b*) slender, contort sigmata with a longer axis of 0·04–0·075 mm.

Specimens of this species were obtained at two stations off the south-west coast of Ireland at depths varying from 250 to 728 fathoms.

Iotrochota acanthostylifera, sp. n.

The sponge is coating a piece of coral; it is a good deal injured.

As far as can be seen, the main skeleton is an irregular reticulation of acanthostyli. Here and there ill-defined fibres are formed. The dermal skeleton consists of flat bundles of spicules, or, in places, of longer fibres.

Spicules.—(1) Acanthostyli, which are straight or slightly curved. The head is a little swollen and is thickly set with strong blunt spines. A few small spines are scattered along the shaft. Length 0·32–0·35 mm. by 0·008 mm. (2) The dermal spicules are tylota. The shaft is straight and the ends are unequal, one end being more rounded than the other. Length 0·3–0·33 mm. by 0·005 mm. (3) Isanchoræ, 0·045–0·5 mm. in length, with about 8–10 teeth at either end. (4) Birotulæ, 0·015 mm. in length.

The species was dredged off the south-west coast of Ireland at a depth of 627–728 fathoms.

Hymedesmia helgæ, sp. n.

The sponge is growing in a thin encrustation on coral and on a piece of *R. tepora*.

The main skeleton consists of acanthostyli, set vertically with their heads on the substratum. The dermal skeleton is made up of thick bundles of spicules, which are arranged more or less vertically in the sponge. Beneath the surface they spread out, and are continued as strong fibres running parallel to the surface of the sponge. The dermal membrane is crowded with isochelæ arcuatæ.

Spicules.—(1) The longer acanthostyli have a slightly curved shaft and a head which is, at the most, very slightly marked. The lower part of the shaft is thickly covered with rather small spines; the remainder of the shaft is set with very small spines, so small that the shaft looks merely roughened. Length 0·25–0·35 mm. by 0·01 mm. The

small acanthostyli have a slightly curved shaft, which is covered with small recurved spines along its whole length. These spicules are about 0·125–0·15 mm. in length by 0·005–0·008 mm. (2) The dermal spicules are strongyla, which are straight and polytylote. They measure 0·35–0·5 mm. in length by 0·006–0·008 mm. (3) The isochelæ arcuatæ have a strongly curved shaft which is very broad in front view. They are 0·035–0·04 mm. in length.

This species was dredged off the west and south-west coasts of Ireland at depths of 388 and 468 fathoms.

Hymedesmia spinosa, sp. n.

The sponge is growing in a very thin encrustation on coral. The main skeleton consists of acanthostyli which are placed very close together and are set vertically with their heads on the substratum. The dermal spicules are in bundles which lie more or less horizontally to the surface.

Spicules.—(1) The acanthostyli measure from 0·09 to 0·22 mm. in length, with a maximum diameter of 0·013 mm. above the head. They cannot be separated into two groups. The shaft is straight or very slightly curved. The head is fairly well marked and is thickly covered with long, stout, blunt spines; the remainder of the shaft is set with recurved spines. The longer spicules are more sparingly spined along the shaft than are the shorter ones, and the spines are smaller. (2) The dermal spicules are straight, slightly fusiform tornota, measuring 0·18–0·26 mm. by 0·005 mm. (3) The isochelæ arcuatæ are very numerous. They have a thick, usually very strongly curved shaft, with short teeth. They measure 0·03–0·038 mm. in length. The species is nearly allied to *Hymedesmia procumbens*, Lundbeck.

The sponge was dredged at two stations off the south-west coast of Ireland at depths varying from 500 to 728 fathoms.

Hymedesmia hibernica, sp. n.

The sponge forms a thin encrustation on two specimens of *Caryophyllia clavus*.

The main skeleton consists of acanthostyli which stand vertically with their heads on the substratum. The slender dermal spicules are united into bundles which are placed more or less vertically in the sponge; they bend round beneath the dermis and are continued as fibres running parallel to the surface.

Spicules.—(1) The acanthostyli fall into two groups: the longer measure from 0·25 to 0·325 mm. in length by 0·008 mm.

They have a slightly curved shaft and a head which is thickly covered with short blunt spines. A few small recurved spines are scattered along the shaft, sometimes to nearly half its length. The shorter acanthostyli are 0·11–0·13 mm. in length by 0·006 mm. The shaft is straight, and the head is, at the most, very slightly marked, and is covered with rather long blunt spines. The shaft is spined throughout its length. (2) The dermal spicules are slender strongyla measuring 0·22–0·25 mm. in length by 0·0025 mm.

Microscleres are absent from the sponge.

The species was dredged in 37 fathoms off Reenacry Head, Co. Kerry.

Ectyodoryx atlanticus, sp. n.

The sponge is coating a piece of coral.

The main skeleton consists of a network of large acanthostyli, lying usually three or four together, sparingly echinated by small acanthostyli. A small quantity of spongin is present. The dermal spicules form thick fibres, but the exact arrangement cannot be made out owing to the injured surface of the only specimen available.

Spicules.—(1) The large acanthostyli have a slightly curved shaft. The head is swollen and is covered with short blunt spines. A few spines are sometimes scattered along the shaft for a short distance. On the other hand, some of the spicules are almost quite smooth. These spicules measure about 0·66–0·95 mm. in length by 0·015–0·02 mm. in diameter above the head. (2) The echinating acanthostyli are small and few in number. The shaft is straight; the head is a little swollen and is covered with rather long spines. The shaft is thickly set with small recurved spines. The length is 0·1–0·14 mm. by 0·01 mm. above the head. (2) The dermal spicules are strongyla with rather unequal ends, one end being slightly thicker than the other. The shaft is often a little crooked. Length 0·4–0·5 mm. by 0·006 mm. (3) Isochelæ arcuatæ. The shaft is rather strongly curved. Length 0·045–0·06 mm.

The species was dredged off the south-west coast of Ireland in 468 fathoms.

Eurypon acanthotoxa, sp. n.

The sponge is growing in a small, thin encrustation on coral.

The main skeleton consists of acanthostyli which stand vertically with their heads on the substratum. The dermal

spicules are in bundles which apparently lie more or less obliquely to the surface, the ends of the spicules projecting beyond the dermis.

Spicules.—(1) Acanthostyli. These vary in size from about 0·16–0·9 mm. in length by 0·008–0·025 mm. The longer of these spicules have a slightly curved shaft. The head is thickly covered with short, stout, blunt spines, the remaining part of the spicule being smooth. The shorter acanthostyli have a curved shaft. The head is covered with short, stout, blunt spines. Similar spines extend a little way along the shaft. The rest of the shaft is set with recurved spines. These two extremes in the acanthostyli are linked together by other acanthostyli of varying lengths and of varying degrees of spination, so that it is not possible to divide the spicules into two groups. (2) The dermal spicules are long straight styli, minutely spined on the head. Length 0·5–0·75 mm. by 0·008 mm. (3) Isochelæ palmatæ, 0·019 mm. in length. (4) Toxa. These have a well-rounded bend in the middle of the shaft and very slightly recurved ends, which are spined. The size varies from very minute to about 0·35 mm. in length, with a maximum thickness of 0·003 mm.

The sponge was dredged off the south-west coast of Ireland in 250–542 fathoms.

Eurypon ditoxa, sp. n.

The sponge is growing in a very thin encrustation on a piece of *Retepora*.

The main skeleton consists of acanthostyli, which are placed vertically with their heads on the substratum. The dermal spicules are in bundles set more or less obliquely to the surface.

Spicules.—(1) Acanthostyli. The largest of these spicules are slightly curved. The shaft is smooth except at the base, which is thickly covered with short blunt spines. Length about 0·3–0·6 mm., with a maximum diameter of 0·02 mm. The small acanthostyli are straight or slightly curved ; the head is covered with rather strong blunt spines and the shaft is thickly set along its whole length with small recurved spines. Length 0·125–0·2 mm., with a maximum diameter of 0·01 mm. (2) The dermal spicules are styli which are often a little crooked. The head is very minutely spined. Length 0·4–0·5 mm. by 0·005 mm. (3) Isochelæ palmatæ, 0·015 mm. in length. (4) Toxa of two kinds—(*a*) with a wide even curve and short arms ending in sharp, slightly

recurved points. Length 0·08–0·13 mm., with a maximum thickness of about 0·0025 mm. ; (*b*) with very long and very slender straight arms, and with rather an abrupt curve in the middle of the spicule. The maximum length is about 0·8 mm.

The sponge was dredged off the west coast of Ireland in 388 fathoms.

Eurypon tenuissimum, sp. n.

The sponge is growing in a small, very thin encrustation on coral.

The main skeleton consists of acanthostyli which are set vertically with their heads on the substratum. The dermal skeleton consists of styli, apparently arranged in bundles, set vertically to, and projecting above, the surface, but their exact arrangement could not be made out owing to the scanty material available for examination.

Spicules.—(1) Acanthostyli. The largest of these spicules are from 1 to 1·5 mm. in length, with a maximum diameter of 0·021 mm. The slightly curved shaft tapers to a rather short point at the apex. The base is covered, sometimes very sparingly, with rather short blunt spines. Smaller acanthostyli, spined to some distance along the shaft, are intermediate both in size and in amount of spination between the foregoing and the smallest acanthostyli, which are about 0·12–0·14 mm. in length. These latter are thickly spined along their whole length. The head is covered with short blunt spines, the shaft with recurved spines. (2) The dermal styli are minutely spined on the head; they are 0·45–0·7 mm. by 0·006 mm. (3) Isochelæ palmatæ, 0·021 mm. in length. (4) Toxa, very slender, with long straight arms. Maximum length about 0·55 mm.

The sponge was dredged off the west coast of Ireland in 388 fathoms.

Eurypon microchela, sp. n.

The sponge is growing in a very thin encrustation on coral.

The main skeleton consists of acanthostyli, which are placed very close together and are set vertically with their heads on the substratum. The long acanthostyli project far above the surface of the sponge. The dermal spicules are in small bundles and project more or less obliquely above the surface.

Spicules.—(1) Acanthostyli. The long acanthostyli are very slightly curved and taper to a rather long point. The head is well marked and is rounded; it is thickly covered with short, stout, blunt spines. A few small spines are scattered along the shaft. These spicules measure about 0·5–0·8 mm. in length by 0·013 mm. above the head. The short acanthostyli are straight and taper to a long fine point. The head is fairly well marked and is covered with rather strong blunt spines. The shaft is thickly set with small recurved spines. The length varies from 0·12–0·17 mm. by 0·008 mm. (2) The dermal spicules are slender subtylostyli, very minutely spined on the head. The shaft is often rather curved. The length is about 0·3–0·4 mm. by 0·003 mm. (3) Isochelæ palmatæ, very minute, measuring only 0·008 mm. in length.

The species was dredged off the south-west coast of Ireland in 250–542 fathoms.

Axinella pyramidata, sp. n.

The sponge, which is cut off from its support, is 15 mm. in height and 17 mm. in diameter at its summit. In shape it is somewhat like a three-sided pyramid standing on its apex, except that the sides are deeply cut vertically into a series of flattened lobes. The upper surface is flat, but here and there it rises into small knob-like elevations.

The skeleton consists of closely-set plumose columns of spicules which run upwards through the sponge, and then bend out towards the surface, where they end in brushes of styli which project for part of their length beyond the dermis. A considerable amount of spongin is present, cementing the spicules together.

Spicules.—(1) Styli varying from about 0·23 mm. to 1 mm. in length by 0·01–0·016 mm. In the shorter styli the shaft is rather sharply bent at a little distance above the head. The longer styli are usually slightly curved. There is sometimes a slight swelling on the shaft a little distance above the head. (2) Oxea about 0·3–0·6 mm. in length by 0·01–0·013 mm. They are sharply and irregularly bent, and taper at either end to a rather short point. Many of the oxea have a slight swelling about the middle of the spicule.

The only specimen in the collection was dredged off the Kerry coast in 37 fathoms.

Notes on some of the Species.

Hamacantha johnsoni (Bowerbank) and *H. falcula* (Bowerbank).

A great deal of confusion exists with regard to these two species. An examination of the type-slides showed that *Hamacantha johnsoni* possesses the following kinds of spicules—oxea, diancistra of two forms, and sigmata,—while *Hamacantha falcula* possesses styli, diancistra of three forms, and toxa. The former species, in fact, has in recent years been called *Hamacantha schmidti* (Carter) and the latter has usually been referred to as *Hamacantha johnsoni* (Bowerbank).

Rhaphidotheca marshall-halli, Kent.

Two specimens of *Rhaphidotheca* are in the collection—one with exotyles of the shape characteristic of *R. marshall-halli*, Kent, and the other with exotyles shaped like those of *R. affinis*, Carter. From an examination of the two specimens it has been decided to regard the latter name as a synonym of *R. marshall-halli*. The union of these two species has been suggested from time to time by various authors.

(?) *Clathria anchorata* (Carter).

This sponge, which is doubtfully referred to the genus *Clathria*, was described by Carter under the name *Dictyocylindrus anchorata.*

Anchinoë fictitius (Bowerbank).

The sponge called by Bowerbank *Microciona fictitia* was found to have the same arrangement of the skeleton and the same kinds of spicules as *Hymeniacidon perarmatus*, Bowerbank, which is the type-species of Gray's genus *Anchinoë*. This genus may be defined as follows :—Ectyoninæ with a skeleton composed of branching fibres which consist of multiserially arranged smooth diactinals echinated by acanthostyli. No special dermal skeleton. Microscleres isochelæ arcuatæ solely, or perhaps with other forms.

Plumohalichondria, Carter, must be regarded as a synonym of *Anchinoë*, Gray.